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Can Eyes and Ears in Space Monitor an Arms Deal?

High-tech spying is being tested by arms advances, fueling an argument about the risks in new treaties.

With completion of a new Defense Department study alleging Soviet arms-control violations, questions about how to detect cheating cast a shadow over all discussion of future agreements. The issue—verification, in arms-control jargon—has hung over negotiations from the beginning, but new technology makes it infinitely more complicated. It could be the ultimate obstacle as Ronald Reagan and Mikhail Gorbachev explore what comes next.

Technical advances for monitoring compliance with arms-control agreements have been breathtaking. With today's surveillance techniques, says David Hafemeister, a physicist at California Polytechnic University, "we sometimes read the other guy's mail before he does." And vice versa.

These "national means of collection," mainly satellites in space, have been the heart of verification of earlier arms-control treaties. Now, a combination of electronic eyes and ears orbiting in space, buried in the ground and sweeping the horizons constantly monitor the pulse of the earth. They record subterranean nuclear explosions as well as missile tests in the atmosphere. Powerful cameras overhead produce photographs for delivery to the White House within an hour. During the Iranian hostage crisis in 1980, photos were of such high quality that specialists claimed they could identify individual ayatollahs by the shape of their beards.

Close-up view. The most recent developments include phased array radars that can detect objects of basketball size from a thousand kilometers. New satellites—the KH-12 series—soon will swoop from high orbits to altitudes of 75 miles for close looks at suspicious areas.

As a result, many arms-control specialists say verification should no longer be an obstacle to negotiations. Albert Carnesale, professor of public policy at the John F. Kennedy School of Government at Harvard University, claims that "our ability to detect violations is superb. If the Soviets push at the margins of an agreement, we will know—and they'll know we know."

Yet the success of the older generation of technology paradoxically has in-

stilled caution about the future. Satellite evidence led to U.S. charges that the Soviets repeatedly violated agreements through breaches that included the installation of illegal radars and the deployment of forbidden missiles. These charges must still be resolved as the United States and the Soviet Union decide whether to continue to honor the unratified SALT II treaty past the end of the year.

To skeptics, including many in the administration, the advances therefore are not enough. As they see it, the opportunities for cheating, even when it can be detected, present too great a risk for all but the most minor agreements. A partial solution may be found in on-site inspections, where disputes over verification can be narrowed still further.

Historically, the Soviets have been

seriously meant and how much is propaganda is uncertain as the 20-year debate over whether verification technology can keep up with increasingly sophisticated weapons continues unsettled.

Hopeless task. New mobile long-range missiles and antisatellite weapons present fresh problems for verification. One of the most important challenges is the cruise missile, essentially an unmanned jet aircraft with either nuclear or conventional warheads. Cruise missiles are cheap to produce. They can be launched from the ground, carried on planes or fired from ships and submarines. Just as sea-launched rockets are hard to detect, so sea-launched cruise missiles, deployed by the thousands, defeat all verification techniques developed so far. The administration says they will have to remain uncounted. The Soviets would ban all long-range cruise missiles, perhaps because U.S. technology is superior to theirs.

The Soviet position will not prevail, if only because the ban itself would be unverifiable. The compromise, if there is one, more likely will come from count-



From space, a supercamera records work on a Soviet nuclear carrier.

reluctant to allow foreigners even controlled access to their military secrets. Now, they say, at least privately, that they would negotiate direct inspection under a general agreement to reduce offensive weapons. They agreed to such access earlier, in the 1976 treaty between Gerald Ford and Leonid Brezhnev to control so-called peaceful nuclear explosions. That commitment was not tested, however, since the treaty never was ratified by the U.S. Senate. The Soviets, meanwhile, have scorned President Reagan's invitation to monitor U.S. nuclear tests, instead challenging him to end all testing.

How much of the political exchange is

ing only first-strike missiles—the rockets suitable for pre-emptive attack—and bombers—those weapons that can be counted most easily—in any deal to reduce offensive weapons. But no arrangement in sight offers perfection.

"Technology is a check on the other side, but it can't detect everything," says Michael Krepon of the Carnegie Endowment for International Peace. He still has hope, however: "What the technology does is allow both sides to negotiate cooperative arrangements that will allow detection of cheating if it occurs." □

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